APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,734	06/27/2003	Arthur E. Barnes	2149-00300	7757

23505	7590	03/08/2005

CONLEY ROSE, P.C.
P. O. BOX 3267
HOUSTON, TX 77253-3267

EXAMINER
LAU, TUNG S

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/608,734	BARNES, ARTHUR E.
	Examiner	Art Unit
	Tung S. Lau	2863

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 February 2005*.

2a)☒ This action is **FINAL**.　　2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-65* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,8-11,15-26,28,30-33,37-52,56-61,64 and 65* is/are rejected.

7)☒ Claim(s) *5, 7, 12, 13, 14, 29, 27, 34, 35, 36, 53, 54, 55, 62, 63* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some *　c)☐ None of:

　　1.☐ Certified copies of the priority documents have been received.

　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *See office action*.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1.   Information Disclosure Statement filed on 2-15-2005 is acknowledged by the

examiner; A copy of a signed PTO-1449 attached with this office action.

Amendment to the Specification

2.   Amendment to the Specification filed 2-15-2005 has been accepted by the

examiner.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 8-11, 15-26, 28, 30-33, 37-46, 48-52, 56-61 and 64 are rejected

under 35 U.S.C. 102(b) as being anticipated by Gassaway et al. (U.S. Patent

4,528,649).

Regarding claim 1:

        Gassaway discloses a method of measuring continuity of a data set, the method

comprising: obtaining a vector set from the data set; combining vectors from the

vector set to determine a representative vector for the vector set; and calculating

a continuity measurement for the vector set (Col. 2-3, Lines 20-2).

Regarding claim 18:

Gassaway discloses a method of measuring continuity of a data set, the method comprising: obtaining a vector set from the data set (Col. 2-3, Lines 20-2); determining a representative vector for the vector set; and calculating a continuity measurement for the vector set, wherein said calculating includes: finding for each vector in the vector set a projection value indicative of a projection of the vector along a line defined by the representative vector (Col. 2-3, Lines 20-2).

Regarding claim 23:

Gassaway discloses a method of measuring discontinuity of a data set, the method comprising: obtaining a vector set from the data set; combining vectors from the vector set to determine a representative vector for the vector set; and calculating a discontinuity measurement for the vector set (Col. 2-3, Lines 20-2).

Regarding claim 40:

Gassaway discloses a method of measuring discontinuity of a data set, the method comprising: obtaining a vector set from the data set; determining a representative vector for the vector set (Col. 2-3, Lines 20-2); and calculating a discontinue measurement for the vector set, wherein said calculating includes: finding for each vector in the vector set a projection value indicative of a projection of the vector perpendicular to a line defined by the representative vector (Col. 2-3, Lines 20-2, fig. 1, 4a-4c).

Regarding claim 45:

Gassaway discloses a method of seismic exploration that comprises: detecting

seismic energy with an array of detectors, converting detection signals from the

array of detectors into data representing one or more attributes as a function of

position for subsurface formations (Col. 2-3, Lines 20-2); systematically obtaining

subsets of the data as vector sets; and for each vector set combining vectors

from the vector set to determine a representative vector for the vector set and

calculating a continuity or discontinuity measurement with respect to the

representative vector (Col. 2-3, Lines 20-2).

Regarding claim 56:

Gassaway discloses a seismic survey system comprising: a data storage device

that stores seismic measurements; a processor (fig. 18, unit 251) that retrieves .

said seismic measurements as one or more vector sets and combines vectors

from at least one of the vector sets to determine a representative vector (Col. 2-

3, Lines 20-2), wherein said processor calculates a continuity or discontinuity

measurement with respect to the representative vector (Col. 2-3, Lines 20-2).

Regarding claim 2, Gassaway discloses calculating a continuity measurement

includes finding for each vector in the vector set a projection value indicative of a

projection of the vector along a line of similarity defined by the representative

vector (fig. 1-3); Regarding claims 3, 19, 30, 41, 49, 57, Gassaway discloses

summing square of the value (Col. 4, Lines 28-68, Col. 15-16, Lines 66-38);

Regarding claims 4, 6, 20, 21, 42, Gassaway discloses normalizing the sum of

square (Col. 4, Lines 28-68, Col. 15-16, Lines 66-38); Regarding claim 8,

Gassaway discloses summing vector set (fig. 9-11); Regarding claims 9, 50, 58,

Gassaway discloses dividing sum of vector to obtain average (Col. 7, Lines 30-

65, Col. 15-16, Lines 66-38); Regarding claims 10, 11, 32, 51, 59, Gassaway

discloses determine sum of weight in the vector (Col. 2, Lines 20-67); Regarding

claims 15, 37, Gassaway discloses repeating combining and calculating set of

continuity measurements each having a spatial position (Col. 2-3, Lines 20-3, fig.

1-3); Regarding claim 16, Gassaway discloses function of spatial position (Col. 2-

3, Lines 20-3, fig. 1-3); Regarding claims 17, 22, 39, 44, Gassaway discloses

data derived from seismic survey (abstract); Regarding claim 24, Gassaway

discloses calculating a discontinuity measurement includes finding for each

vector in the vector set a projection value indicative of a projection of the vector

perpendicular to a line defined by the representative vector (fig. 4b); Regarding

claim 25, Gassaway discloses sum square projection relative sum of square (Col.

15-16, Lines 62-38); Regarding claim 26, 28, Gassaway discloses normalize sum

square projection of the vector (Col. 15-16, Lines 62-38);); Regarding claim 31,

Gassaway discloses dividing sum of vector (Col. 7-8, Lines 25-25); Regarding

claims 33, 52, 60, Gassaway discloses minimize total distance of the vector set

(fig. 2, 3 Col. 7-8, Lines 25-3, fig. 9-11); Regarding claims 38, 64, Gassaway

discloses displaying function (fig. 18, unit 259); Regarding claim 43, Gassaway

discloses normalize square, averaging data set (Col. 7, Lines 30-65, Col. 15-16,

Lines 66-38); Regarding claim 46, Gassaway discloses continuity or discontinuity

as function of the position (abstract); Regarding claims 48, Gassaway also

discloses two, three dimensional map (fig. 9-11, 4a-4c); Regarding claims 61,

Gassaway discloses representative of at least one of vector sets (fig.2, 3).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section
102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the
subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill
in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the
invention was made.

a. Claims 65, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gassaway et al. (U.S. Patent 4,528,649).

Gassaway discloses a method of seismic exploration that comprises: detecting

seismic energy with an array of detectors, converting detection signals from the

array of detectors into data representing one or more attributes as a function of

position for subsurface formations; systematically obtaining subsets of the data

ms vector sets; and for each vector set averaging vectors from the vector set to

determine a representative vector for the vector set; calculating a continuity or

discontinuity measurement with respect to the representative vector, and

. providing a display with the continuity or discontinuity measurement.

Gassaway did not disclose to display in color, however, It would have been

obvious to one of ordinary skill in the art at the time the invention was made to

modify Gassaway to have the display in color in order to shown better contrast

differences in the measuring of the geological site.

)

Claim Objections

5.   Claims 5, 7, 12, 13, 14, 29, 27, 34, 35, 36, 53, 54, 55, 62, 63 are objected to as

being dependent upon a rejected base claim, but would be allowable if rewritten

in independent form including all the limitation of the base claim and any

intervening claims.

The following is an examiner's statement of reasons for allowance: prior art fail to

teach: regarding claims 5, 27,

$$C = \frac{\sum_i \beta_i^2}{\sum_i E_i}, \text{ wherein } C \text{ represents the continuity measurement, } \beta_i \text{ represents the projection value}$$

for vector i, E_i represents an energy of vector i, and i represents an index that ranges over the

vector set.

regarding claims 7, 29,

$$C = \frac{1}{N} \sum_{i=1}^{N} \frac{\beta_i^2}{E_i}, \text{ wherein } C \text{ represents the continuity measurement, } \beta_i \text{ represents the projection}$$

value for vector i, E_i represents an energy of vector i, i represents an index that ranges over the

vector set, and N represents a number of vectors in the vector set.

regarding claims 12, 34, 53, Manhattan distance measurement; regarding claims

13, 35, 54, 62 use of neural network

Claim 14 is objected due to their dependency on claim 13.

Claim 36 is objected due to their dependency on claim 35.

Claim 55 is objected due to their dependency on claim 54.

Claim 63 is objected due to their dependency on claim 62.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6.   Applicant's arguments filed 2/15/2005 have been fully considered but they are not persuasive.

A. Applicant argues in the arguments that the prior art does not show the 'combining vectors from a vector set to determine a representative vector for the vector set'. Gassaway discloses 'combining vectors from a vector set to determine a representative vector for the vector set 'in Col. 2-3, Lines 20-2 and fig. 9-10.

B. Applicant continues to argue in the arguments that the prior art does not show the 'calculating a continuity and discontinuity set'. Gassaway discloses 'calculating a continuity and discontinuity set' in Col. 2-3, Lines 20-2 and fig. 9-10.

C. Applicant continues to argue in the arguments that the prior art does not show the 'determining a representative vector for the vector set'. Gassaway discloses 'determining a representative vector for the vector set' in Col. 2-3, Lines 20-2 and fig. 9-10.

D. Applicant continues to argue in the arguments that the prior art does not show the 'calculating a continuity, discontinuity measurement for the vector set '. Gassaway discloses 'determining a representative vector for the vector set' in Col. 2-3, Lines 20-2 and fig. 9-10.

Reminds to the applicants that during patent examination, the pending claims must be "given the broadest reasonable interpretation consistent with the specification." Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed

within TWO MONTHS of the mailing date of this final action and the advisory

action is not mailed until after the end of the THREE-MONTH shortened statutory

period, then the shortened statutory period will expire on the date the advisory

action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will

the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Tung S Lau whose telephone number is 571-272-

2274. The examiner can normally be reached on M-F 9-5:30. If attempts to

reach the examiner by telephone are unsuccessful, the examiner's supervisor,

John Barlow can be reached on 571-272-2269. The fax phone numbers for the

organization where this application or proceeding is assigned is 703-872-9306

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TL

2-20-2005

John Carlow
Supervisory Patent Examiner
Technology Center 2800